Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in this Application.

Listing of Claims:

Claim 1. (Currently Amended) An acoustic transducer that converts a mechanical motion into acoustical energy, said acoustic transducer comprising:

a diaphragm that is curved;

at least one support on at least one portion of said diaphragm; and

at least one actuator operatively coupled to said diaphragm and spaced from said support, said actuator configured to move such that movement of said actuator produces corresponding movement of said diaphragm, said diaphragm movement being amplified with respect to said actuator movement, wherein said diaphragm is made of a sheet of optically clear material.

Claim 2. (Canceled)

Claim 3. (Original) The acoustic transducer of claim 1 wherein said actuator is operatively coupled to said diaphragm to partition said diaphragm into two sections, each containing an edge, and wherein said support includes supports fixed at said edge of said diaphragms distal from said actuator.

Claim 4. (Original) The acoustic transducer of claim 3 wherein said curved diaphragm comprises one section that is convex and another section that is concave.

Claim 5. (Original) The acoustic transducer of claim 1 wherein said diaphragm is partitioned into two diaphragms with an edge thereon, and said actuator includes a pair of piezoelectric actuators that are each operatively coupled to said edge of said diaphragms to form two diaphragm sections.

Claim 6. (Original) The acoustic transducer of claim 1 wherein said at least one actuator is characterized by a high force and short linear travel.

Claim 7. (Original) The acoustic transducer of claim 1 wherein said curvature is generally parabolic.

Claim 8. (Original) The acoustic transducer of claim 1 further comprising a seal at at least a portion of the periphery of said diaphragm to assist in maintaining the acoustic pressure gradient across said transducer.

Claim 9. (Original) The acoustic transducer of claim 1 wherein said at least one actuator is a piezo actuator.

Claim 10. (Original) The acoustic transducer of claim 1 wherein said actuator is a piezo bimorph drive.

Claim 11. (Original) The acoustic transducer of claim 1 wherein said piezoelectric drive is a single layer piezo actuator.

Claim 12 (Original) The acoustic transducer of claim 1 wherein said support overlies a video screen display and said diaphragm is spaced from said screen display.

Claim 13. (Original) The acoustic transducer of claim 12 wherein said actuator is a piezoelectric drive and said diaphragm is formed of an optically clear material.

Claim 14. (Original) The acoustic transducer of claim 12 wherein said diaphragm is fixed along a line, and said at least one actuator includes a plurality of actuators that are each operatively coupled to said diaphragm to form a plurality of diaphragm sections.

Claim 15. (Original) The acoustic transducer of claim 1 further comprising an electronic drive circuit operatively connected to said actuator.

Claim 16. (Original) The acoustic transducer of claim 15 wherein said drive circuit comprises an active filter and an amplifier.

Claim 17. (Original) The acoustic transducer of claim 15 wherein said drive circuit further comprises a step-up transformer and a resistor connected in series with said transformer to control high frequency response.

Claim18. (Original) The acoustic transducer of claim 15 wherein said drive circuit drives said actuator to control operation at a main resonance in the transducer output.

Claims 19-20 (Canceled).

Claim 21. (New) An acoustic transducer that converts a mechanical motion into acoustical energy, said acoustic transducer comprising:

a diaphragm that is curved;

at least one support on at least one portion of said diaphragm; and

at least one actuator operatively coupled to said diaphragm and spaced from said support, said actuator configured to move such that movement of said actuator produces corresponding movement of said diaphragm, said diaphragm movement being amplified with respect to said actuator movement, further comprising a seal at at least a portion of the periphery of said diaphragm to assist in maintaining the acoustic pressure gradient across said transducer.

Claim 22. (New) The acoustic transducer of claim 21 wherein said actuator is operatively coupled to said diaphragm to partition said diaphragm into two sections,

each containing an edge, and wherein said support includes supports fixed at said edge of said diaphragms distal from said actuator.

Claim 23. (New) The acoustic transducer of claim 22 wherein said curved diaphragm comprises one section that is convex and another section that is concave.

Claim 24. (New) The acoustic transducer of claim 21 wherein said diaphragm is partitioned into two diaphragms with an edge thereon, and said actuator includes a pair of piezoelectric actuators that are each operatively coupled to said edge of said diaphragms to form two diaphragm sections.

Claim 25. (New) The acoustic transducer of claim 21 wherein said at least one actuator is characterized by a high force and short linear travel.

Claim 26. (New) The acoustic transducer of claim 21 wherein said curvature is generally parabolic.

Claim 27. (New) The acoustic transducer of claim 21 wherein said at least one actuator is a piezo actuator.

Claim 28. (New) The acoustic transducer of claim 21 wherein said actuator is a piezo bimorph drive.

Claim 29. (New) The acoustic transducer of claim 21 wherein said piezoelectric drive is a single layer piezo actuator.

Claim 30. (New) The acoustic transducer of claim 21 wherein said support overlies a video screen display and said diaphragm is spaced from said screen display.

Claim 31. (New) The acoustic transducer of claim 21 wherein said actuator is a piezoelectric drive and said diaphragm is formed of an optically clear material.

Claim 32. (New) The acoustic transducer of claim 21 wherein said diaphragm is fixed along a line, and said at least one actuator includes a plurality of actuators that are each operatively coupled to said diaphragm to form a plurality of diaphragm sections.

Claim 33. (New) The acoustic transducer of claim 21 further comprising an electronic drive circuit operatively connected to said actuator.

Claim 34. (New) The acoustic transducer of claim 33 wherein said drive circuit comprises an active filter and an amplifier.

Claim 35. (New) The acoustic transducer of claim 33 wherein said drive circuit further comprises a step-up transformer and a resistor connected in series with said transformer to control high frequency response.

Claim 36. (New) The acoustic transducer of claim 33 wherein said drive circuit drives said actuator to control operation at a main resonance in the transducer output.

Claim 37. (New) An acoustic transducer that converts a mechanical motion into acoustical energy, said acoustic transducer comprising:

a diaphragm that is curved;

at least one support on at least one portion of said diaphragm; and

at least one actuator operatively coupled to said diaphragm and spaced from said support, said actuator configured to move such that movement of said actuator produces corresponding movement of said diaphragm, said diaphragm movement being amplified with respect to said actuator movement, wherein said support overlies a video screen display and said diaphragm is spaced from said screen display.

Claim 38. (New) The acoustic transducer of claim 37 wherein said actuator is a piezoelectric drive and said diaphragm is formed of an optically clear material.

Claim 39. (New) The acoustic transducer of claim 37 wherein said diaphragm is fixed along a line, and said at least one actuator includes a plurality of actuators that are each operatively coupled to said diaphragm to form a plurality of diaphragm sections.

Claim 40. (New) The acoustic transducer of claim 37 wherein said actuator is operatively coupled to said diaphragm to partition said diaphragm into two sections, each containing an edge, and wherein said support includes supports fixed at said edge of said diaphragms distal from said actuator.

Claim 41. (New) The acoustic transducer of claim 40 wherein said curved diaphragm comprises one section that is convex and another section that is concave.

Claim 42. (New) The acoustic transducer of claim 37 wherein said diaphragm is partitioned into two diaphragms with an edge thereon, and said actuator includes a pair of piezoelectric actuators that are each operatively coupled to said edge of said diaphragms to form two diaphragm sections.

Claim 43. (New) The acoustic transducer of claim 37 wherein said at least one actuator is characterized by a high force and short linear travel.

Claim 44. (New) The acoustic transducer of claim 37 wherein said curvature is generally parabolic.

Claim 45 (New) The acoustic transducer of claim 37 wherein said at least one actuator is a piezo actuator.

Claim 46. (New) The acoustic transducer of claim 37 herein said actuator is a piezo bimorph drive.

Claim 47. (New) The acoustic transducer of claim 37 wherein said piezoelectric drive is a single layer piezo actuator.

Claim 48. (New) The acoustic transducer of claim 37 further comprising an electronic drive circuit operatively connected to said actuator.

Claim 49. (New) The acoustic transducer of claim 48 wherein said drive circuit comprises an active filter and an amplifier.

Claim 50. (New) The acoustic transducer of claim 48 wherein said drive circuit further comprises a step-up transformer and a resistor connected in series with said transformer to control high frequency response.

Claim 51. (New) The acoustic transducer of claim 48 wherein said drive circuit drives said actuator to control operation at a main resonance in the transducer output.